

IN THE CLAIMS:

1. A filter assembly comprising:
  - a filter housing including at least a fluid inlet and a filtrate outlet and defining a
  - 5 fluid flow path between the fluid inlet and the filtrate outlet, wherein the filter housing further includes a removable portion and a cylindrical support having one or more openings;
  - a cylindrical, hollow filter cartridge removably positioned in the fluid flow path closely adjacent to the cylindrical support and facing the one or more openings; and
  - 10 a linkage engagable between the filter cartridge and the removable portion of the filter housing and arranged to rotate and/or axially move the filter cartridge with respect to the cylindrical support in response to removal of the removable portion of the filter housing.
- 15 2. The filter assembly of claim 1 wherein the removable portion of the filter housing comprises a rotatable portion of the filter housing.
3. The filter assembly of claim 2 wherein the filter housing includes a remaining portion and the rotatable portion is threaded to the remaining portion of the filter housing.
- 20 4. The filter assembly of any preceding claim wherein the cylindrical support comprises a hollow cage and the openings comprise perforations through the cage and wherein the filter cartridge is positioned within the perforated cage.

5. The filter assembly of claim 4 wherein the filter housing includes a remaining portion mounted to the removable portion of the filter housing and wherein the perforated cage is mounted to the remaining portion of the filter housing.
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6. The filter assembly of any one of claims 1-3 wherein the cylindrical support comprises a hollow core and the openings comprise perforations through the core and wherein the perforated core is positioned within the hollow filter cartridge.
- 10 7. The filter assembly of claim 6 wherein the filter housing includes a remaining portion mounted to the removable portion of the filter housing and wherein the perforated core is mounted to the remaining portion of the filter housing.
- 15 8. The filter assembly of any preceding claim wherein the filter cartridge comprises a filter pack including a plurality of pleats having one or more polymeric materials.
9. The filter assembly of claim 8 wherein the filter pack further comprises a polymeric wrap positioned around the plurality of pleats.
- 20 10. The filter assembly of any preceding claim wherein the filter cartridge comprises a filter pack having first and second ends and first and second end caps mounted to the first and second ends of the filter pack, respectively.

11. The filter assembly of any preceding claim wherein the linkage comprises one or more link elements operatively associated with the removable portion of the filter housing and one or more link elements operatively associated with the filter cartridge, the link elements of the filter cartridge being engagable with the link elements of the removable portion of the filter housing.
12. The filter assembly of claim 11 wherein the one or more link elements of the filter cartridge comprise a protrusion on the filter cartridge.
13. The filter assembly of claim 11 wherein the one or more link elements of the filter cartridge comprise an indentation in the filter cartridge.
14. The filter assembly of any one of claims 11-13 wherein the filter cartridge has an axially facing end and the link element is positioned at the end of the filter cartridge.
15. The filter assembly of any one of claims 11-13 wherein the filter cartridge has a radially facing side and the link element is positioned at the side of the filter cartridge.
16. The filter assembly of claim 15 wherein the side comprises the outside of the hollow filter cartridge.

17. The filter assembly of any one of claims 11-16 wherein the link elements are configured to transmit a twisting force from the removable portion of the filter housing to the filter cartridge.
- 5 18. The filter assembly of any one of claims 11-17 wherein the link elements are configured to transmit an axial force from the removable portion of the filter housing to the filter cartridge.
- 10 19. The filter assembly of any one of claims 11-18 wherein at least one of the link elements comprises a protrusion having a hook-shaped configuration.
20. A filter cartridge for a filter housing including a cylindrical support having one or more openings and a removable portion having one or more link elements, the filter cartridge comprising a cylindrical, hollow filter pack configured to fit closely adjacent to the cylindrical support facing the openings in the support, the filter pack having first and second ends, and first and second end caps mounted to the first and second ends of the filter pack, at least one of the first and second end caps including one or more link elements configured to engage the one or more link elements on the removable portion of the filter housing to remove the filter cartridge from the cylindrical support.
- 20 21. The filter cartridge of claim 20 wherein the filter cartridge is free of at least one of a perforated core and a perforated cage.

22. The filter cartridge of claim 20 or 21 wherein the filter pack includes a plurality of pleats formed from one or more polymeric materials.

23. The filter cartridge of claim 22 wherein the filter pack further includes a  
5 polymeric wrap positioned around the plurality pleats.

24. A filter cartridge comprising:

a cylindrical, hollow, substantially polymeric filter pack having first and second  
ends; and

10 first and second end caps mounted to the first and second ends of the filter pack,  
at least one of the end caps including one or more link elements configured to transmit a  
twisting force and/or an axial force to the end cap;

wherein the filter cartridge is free of at least one of a perforated core and a  
perforated cage.

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25. The filter cartridge of claim 24 wherein the filter pack includes a plurality of  
pleats formed from one or more polymeric materials.

26. The filter cartridge of claim 25 wherein the filter pack includes a polymeric wrap  
20 positioned around the plurality of pleats.

27. The filter cartridge of claim 24, 25 or 26 wherein the filter cartridge is free of both  
a perforated core and a perforated cage.

28. The filter cartridge of any one of claims 20-27 wherein the link element comprises a protrusion extending from the end cap.

5 29. The filter cartridge of claim 28 wherein the protrusion extends axially from the end cap away from the filter pack.

30. The filter cartridge of claim 29 wherein the protrusion has a generally hook-shaped configuration.

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31. The filter cartridge of claim 30 wherein the hook-shaped configuration is generally L-shaped.

32. The filter cartridge of any one of claims 20-31 wherein the link element  
15 comprises a first link element and the end cap further includes a second link element angularly spaced from the first link element.

33. The filter cartridge of any one of claims 20-27 wherein the link element comprises an indentation in the end cap.

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34. The filter cartridge of claim 33 wherein the indentation includes an axial channel and a theta channel which intersects the axial channel.

35. A method for removing a filter cartridge from a filter housing comprising removing a removable portion of the filter housing which is linked to a cylindrical filter cartridge, including rotating and/or axially moving the filter cartridge closely adjacent to a stationary cylindrical support having one or more openings facing the filter cartridge,  
5 and removing the filter cartridge from the stationary support and the filter housing.
36. The method of claim 35 wherein rotating and/or axially moving the filter cartridge adjacent to a stationary support includes rotating and/or axially moving the filter cartridge within a stationary perforated cage.  
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37. The method of claim 35 wherein rotating and/or axially moving the filter cartridge adjacent to a stationary support includes rotating and/or axially moving the filter cartridge around a stationary perforated core.
- 15 38. The method of claim 35, 36, or 37 wherein removing the filter cartridge includes axially sliding the filter cartridge along the stationary support.
39. The method of any one of claims 35-38 wherein removing the removable portion of the filter housing includes engaging one or more link elements on the removable  
20 portion of the filter housing with one or more link elements on the filter cartridge and transmitting a twisting force and/or an axial force from the removable portion of the filter housing to the filter cartridge through the engaged link elements.

40. The method of claim 39 wherein removing the removable portion of the filter housing comprises rotating a rotatable portion of the filter housing, including transmitting a twisting force and an axial force from the rotatable portion of the filter housing to the filter cartridge through the engaged link elements.

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41. The method of any one of claims 35-40 wherein removing the removable portion of the filter housing includes rotating a rotatable portion with a lever.

42. The method of any one of claims 35-41 wherein removing the removable portion  
10 of the filter housing includes unscrewing the removable portion of the filter housing from the remainder of the filter housing.